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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/913,423	08/13/2001	Helmut Schiller	101194-33	9510

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BRUCE LONDA
NORRIS, MCLAUGHLIN & MARCUS, P.A.
220 EAST 42ND STREET, 30TH FLOOR
NEW YORK, NY 10017

EXAMINER
LE, DANG D

ART UNIT	PAPER NUMBER
2834	

DATE MAILED: 12/04/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/913,423	SCHILLER, HELMUT	
	Examiner	Art Unit	
	Dang D Le	2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-19 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-19 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 13 August 2001 is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 1 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Information Disclosure Statement

1. Besides the information disclosure statement (IDS) submitted on 08/13/01 listing three documents, there are five copies of foreign references provided to the USPTO with the International Search Report. There is no Form PTO 1449 listing the above five foreign references for the examiner to consider. As a result, the above five foreign references are listed in Form PTO 892 and have been considered by the examiner.

Drawings

2. Formal drawings are required in response to this Office Action because there are no drawings found in this application. The examiner has relied on the drawings of the application PCT/EP00/01093.

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the following features, but not limited to, must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

- "Ribs" in claim 5.
- "Radially extending ribs" in claim 6.
- "Radial channels" in claims 6 and 7.
- "The return of the gaseous atmosphere" in claim 6.
- "Metal plate" in claim 7.
- "Air inlet openings" and "air outlet openings" in claim 7.

- "The pole face of the permanent magnets" covering "two pole faces of the coils" in claim10 or "three pole faces of the coils in claim 11 or "more than three pole faces" in claim 12.
- "Position pick-up" in claim 13.
- "Rectifying circuit" in claim 18.
- "Electronic inverter circuit" in claim 19.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

4. Claim 1 is objected to because of the following informalities: claim 1, line 1, replace "Electric" with -- An electric --. Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 6 and 7 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. It is not clear how the "radially extending ribs are provided on the inner faces of the housing end walls facing the rotor and between these ribs radial channels are formed for the return of the

gaseous atmosphere circulated in the interior of the housing" as shown in claim 6. it is not clear how the "metal plate" closes off the radial channels as shown in claim 7.

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 1-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

There is insufficient antecedent basis for the following limitations in the claim. Claim 1 recites the limitations "the end face" in line 11, first page, "the free end" in line 7, "the end regions" in line 10, second page. It is not clear what "the pole faces" in line 10, second page refer to because there are "a pole face" mentioned in line 10, first page and line 7, second page. Claim 7 recites the limitations "the radial walls" in line 3 and "the radially inner and radially outer end" in lines 4-5 of the claim.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claims 1-3, 8, 9, 15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bustamante et al. (U.S. Pat. No. 5,982,058) in view of Pavlovich et al. (U.S. Pat. No. 5,892,307).

Regarding claim 1, Bustamante et al. show an electric machine (10) with a rotor (30, 38) which is rotatably mounted in a housing (not shown) with a rotor shaft (52) which extends beyond the housing, a plurality of electromagnet components which are statically disposed in the housing at uniform angular spacing and spaced from the axis of rotation of the rotor, each with a coil core (41, 42) bearing a coil winding (44, 45) consisting of one or more conductors and with permanent magnets (32, 36) which are disposed at uniform angular spacing and are non-rotatably retained in or on the rotor, these permanent magnets each having a pole face aligned opposite the end faces of the coil cores (41, 42) and each having a polarity which is successively reversed in the peripheral direction (Figure 2), wherein the coil cores (41, 42) of the electromagnet components are disposed parallel to the axis of rotation of the rotor shaft (52) in the interior of the housing in such a way that their opposing end faces each lie in two planes which are spaced from one another and extend at right angles to the axis of rotation of the rotor shaft and the ends (46) of the electric conductors which form the coil winding (44, 45) of the individual electromagnet components are interconnected via an electric or electronic control device to form at least two pairs (two for 44 and two for 45) of electrical connections and the rotor has at least two outer armature discs (30, 38) which extend radially to before the end faces of the coil cores and in which the permanent magnets are retained with their pole faces aligned with the respective associated end faces of the coil cores.

Bustamante et al. do not show the radially inner region of the said armature discs being provided with holes, wherein in each case pairs of legs, which succeed one

another in the peripheral direction and are each provided with a pole face of different polarity on the free end facing the coil, of the permanent magnets provided in the two opposing outer armature discs are connected to one another in the end regions remote from the pole faces by a respective yoke which encloses the magnetic field and is made from soft or hard magnetic material, that the armature discs are connected to one another by radially extending walls which form the cavity between the armature discs unto a plurality of chambers which are offset with respect to one another in the peripheral direction and are open towards the electromagnet components, and that the radially inner holes provided in the armature discs each open into the chambers of the rotor.

Pavlovich et al. show the radially inner region of the said armature discs (4, 6) being provided with holes (20), wherein in each case pairs of legs, which succeed one another in the peripheral direction and are each provided with a pole face of different polarity on the free end facing the coil, of the permanent magnets (9) provided in the two opposing outer armature discs (4, 6) are connected to one another in the end regions remote from the pole faces by a respective yoke (10, 11) which encloses the magnetic field and is made from soft or hard magnetic material, that the armature discs (4, 6) are connected to one another by radially extending walls (22 through shaft 7) which form the cavity between the armature discs unto a plurality of chambers which are offset with respect to one another in the peripheral direction and are open towards the electromagnet components, and that the radially inner holes (20) provided in the

armature discs (4, 6) each open into the chambers of the rotor (Figures 1 and 3) for the purpose of reducing heat.

Since Bustamante et al. and Pavlovich et al. are all from the same field of endeavor; the purpose disclosed by one inventor would have been recognized in the pertinent art of the others.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to use the yokes and to include holes and chambers between the armature discs as taught by Pavlovich et al. for the purpose discussed above.

Regarding claim 2, it is noted that Pavlovich et al. also show a row of electromagnet components (13, 14) being provided in the interior of the housing of the machine, and that the rotor having two outer armature discs (4, 6) guided on opposing sides in front of the coil core end faces of the electromagnet components.

Regarding claim 3, it is noted that Pavlovich et al. also show two or (not necessary included) more rows of electromagnet components spaced from one another in the longitudinal direction of the rotor shaft are disposed in the interior of the housing, and that in addition to the two outer armature discs which are guided in front of the outer end faces of the coil cores, pointing in opposite directions, of the outermost rows the rotor has an additional armature disc with permanent magnets guided into each space between adjacent rows of electromagnet components in front of the end surfaces thereof which face one another, and the pole faces of differing polarity of the permanent magnets which are each exposed on opposing sides of the respective additional

armature disc are aligned in the radial direction with the end faces of the coil cores of the rows of electromagnet components.

Regarding claim 8, it is noted that Pavlovich et al. also show air inlet openings (19) being provided in regions of the housing lying opposite the holes in the armature discs and air outlet openings which are offset radially outwards are provided in the housing.

Regarding claim 9, it is noted that Pavlovich et al. also show the electromagnet components disposed at uniform spacing in the peripheral direction and protrude from the inner face of the peripheral housing wall into the space formed between the armature discs (Figure 1).

Regarding claim 15, it is noted that Pavlovich et al. also show the electromagnet components each held on separate support elements which can each be installed in an associated opening the in the peripheral wall of the housing in such a way that the pole faces of the coils of the electromagnet components are in the prescribed assembly position in alignment with the pole faces of the permanent magnets between the armature discs.

Regarding claim 17, it is noted that Bustamante et al. also show the electromagnet components each have two separate coils with opposed directions of winding, and that an electric or electronic control device being provided for the selective electric control of each of the coil windings.

11. Claims 4-7 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bustamante et al. (U.S. Pat. No. 5,982,058) in view of Pavlovich et al. (U.S. Pat.

No. 5,892,307) as applied to claim 1 above, and further in view of Whiteley (U.S. Pat. No. 3,999,092).

Regarding claim 4, the machine of Bustamante et al. modified by Pavlovich et al. includes all of the limitations of the claimed invention except for the interior of the housing being closed off and sealed against the external atmosphere.

Whiteley shows the interior of the housing being closed off and sealed against the external atmosphere for the purpose of reducing noise.

Since Bustamante et al., Pavlovich et al. and Whiteley are all from the same field of endeavor; the purpose disclosed by one inventor would have been recognized in the pertinent art of the others.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to seal off the interior of the housing as taught by Whiteley for the purpose discussed above.

Regarding claim 5, it is noted that Whiteley also shows the outer and/or inner face of the housing being provided with ribs (25, 26) in order enlarge the surface of the housing which gives off or takes up heat.

Regarding claim 6, it is noted that Whiteley also shows radially extending ribs being provided on the inner faces of the housing end walls facing the rotor and between these ribs radial channels are formed for the return of the gaseous atmosphere circulated in the interior of the housing.

Regarding claim 7, it is noted that Whiteley also shows the radial channels being closed off on the armature disc side by a metal plate so that between the radial walls

channels are produced which are open only on the radially inner and radially outer end and are connected to the interior of the housing and through which the circulated air is returned.

Regarding claim 16, it is noted that Whiteley also shows electromagnet components as a whole being pre-installed in an annular mounting, which in turn is held in the interior of the housing.

12. Claims 10-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bustamante et al. (U.S. Pat. No. 5,982,058) in view of Pavlovich et al. (U.S. Pat. No. 5,892,307) as applied to claim 1 above, and further in view of Burgbacher (U.S. Pat. No. 5,757,100).

Regarding claim 10, the electric machine of Bustamante et al. modified by Pavlovich et al. includes all of the limitations of the claimed invention except for each pole face of the permanent magnets having in the peripheral direction an extent which covers two pole faces of the coils of two electromagnet components which succeed one another in the peripheral direction, and that the control means is designed so that in order to drive the rotor this control means switches over the polarity of every second one of the electromagnet components which succeed one another in the peripheral direction with each rotation of the rotor about an angular spacing which corresponds to the angular spacing between two electromagnet components which succeed one another in the peripheral direction.

Burgbacher shows each pole face of the permanent magnets having in the peripheral direction an extent which covers two pole faces of the coils of two

electromagnet components which succeed one another in the peripheral direction, and that the control means is designed so that in order to drive the rotor this control means switches over the polarity of every second one of the electromagnet components which succeed one another in the peripheral direction with each rotation of the rotor about an angular spacing which corresponds to the angular spacing between two electromagnet components which succeed one another in the peripheral direction for the purpose of reducing cogging torque.

Since Bustamante et al., Pavlovich et al. and Burgbacher are all from the same field of endeavor; the purpose disclosed by one inventor would have been recognized in the pertinent art of the others.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to expand the magnet to cover two pole faces of the electromagnet components as taught by Burgbacher for the purpose discussed above.

Regarding claim 11, it is noted that Burgbacher also shows three pole faces of the coils of three electromagnet components which succeed one another in the peripheral direction can be associated with each pole face of the permanent magnets, in which case the control means is designed so that in order to drive the rotor, after the rotor has rotated by an angular spacing corresponding to the angular spacing between electromagnet components which succeed one another in the peripheral direction, the control means switches over the polarity of every third one of the electromagnet components which succeed one another in the peripheral direction.

Regarding claim 12, it is noted that Burgbacher also shows more than three pole faces of the coils of electromagnet components which succeed one another in the peripheral direction can be associated with each pole face of the permanent magnets, in which the case the control means is designed so that in order to drive the rotor, after the rotor has rotated by an angular spacing corresponding to the angular spacing between electromagnet components which succeed one another in the peripheral direction, the control means successively switches over the polarity of every one of the electromagnet components, which succeed one another in the peripheral direction, of the group of electromagnet components associated with a permanent magnet.

Regarding claim 13, it is noted that Pavlovich et al. also show a position pick-up which senses the relative rotational position of the rotor in the housing associated with the control device for initiating the switching over of the polarity of the electromagnet components.

Regarding claim 14, it is noted that Pavlovich et al. also show the position pick-up constructed as a contactless sensor, particularly an optical sensor, which senses the relative rotational position of the rotor with respect to the housing.

13. Claims 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bustamante et al. (U.S. Pat. No. 5,982,058) in view of Pavlovich et al. (U.S. Pat. No. 5,892,307) as applied to claim 1 above, and further in view of Lin (U.S. Pat. No. 5,977,684).

Regarding claim 18, the machine of Bustamante et al. modified by Pavlovich et al. includes all of the limitations of the claimed invention except for the machine

operating as a generator, wherein the ends of the electrical conductors of each electromagnet component which form the coil winding are connected to the input connections of a separate rectifying circuit, and that the rectifying circuits are connected on the output side to a pair of electric bus lines.

Lin shows the machine operating as a generator, wherein the ends of the electrical conductors of each electromagnet component which form the coil winding are connected to the input connections of a separate rectifying circuit, and that the rectifying circuits are connected on the output side to a pair of electric bus lines for the purpose of generating electricity.

Since Bustamante et al., Pavlovich et al. and Lin are all from the same field of endeavor; the purpose disclosed by one inventor would have been recognized in the pertinent art of the others.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to operate the machine as a generator and add a separate rectifying circuit as taught by Lin for the purpose discussed above.

Regarding claim 19, it is noted that Lin also shows an electronic inverter circuit being connected downstream of the generator in order to convert the generated direct current into an alternating or three-phase current which is synchronized with the power supply.

Information on How to Contact USPTO

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dang D Le whose telephone number is (703) 305-0156. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on (703) 308-1371. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

DDL
December 1, 2002
DC